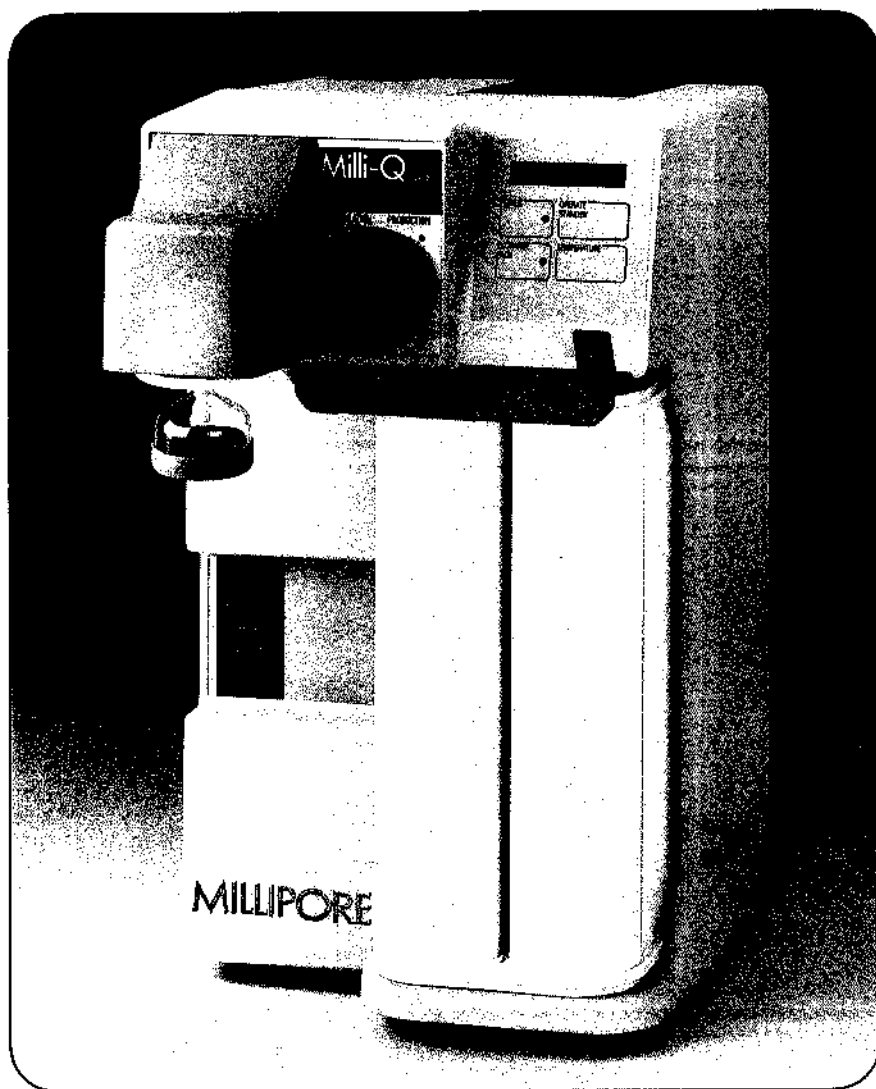


# Milli-Q® Plus Water Purification System



## Installation and Operation

MILLIPORE

# MILLI-Q PLUS

## A. Introduction

1. System Description
2. External Features
3. Schematic
4. Dimensions
5. Function of Components/Controls

## B. Installation

1. Unpacking
2. Battery Insertion
3. Water Connection
4. Electrical Connection
5. Bench/Wall Mounting
6. Pack Installation
7. Initial Startup

## C. Operation

1. Switch On - Auto Test
2. Operate
3. Standby
4. Auto Recirculation (Intermittent)
5. Temperature
6. Battery
7. Remote Standby
8. Pack Replacement
9. Final Filter - (Millipak) - Replacement

## D. Maintenance

1. Access to PC Board
2. Battery Replacement
3. Fuse Replacement
4. Set Point Adjustment
5. Pack Replacement Frequency Setting
6. Changing the Frequency of Automatic Recirculation
7. Troubleshooting

## E. Technical Information

1. Components
2. Specifications
3. Ordering Information
4. Warranty

## **Milli-Q Plus**

### **A. INTRODUCTION**

#### **1. System Description**

The Milli-Q Plus system is a state of the art water purification system, designed to provide the final polish to water which has been pretreated by primary purification methods such as Reverse Osmosis (RO), Distillation, or Deionization (DI).

The system provides ultrapure water for the laboratory for use in critical applications requiring the absence of interfering inorganic, organic, particulate, or microbiological material.

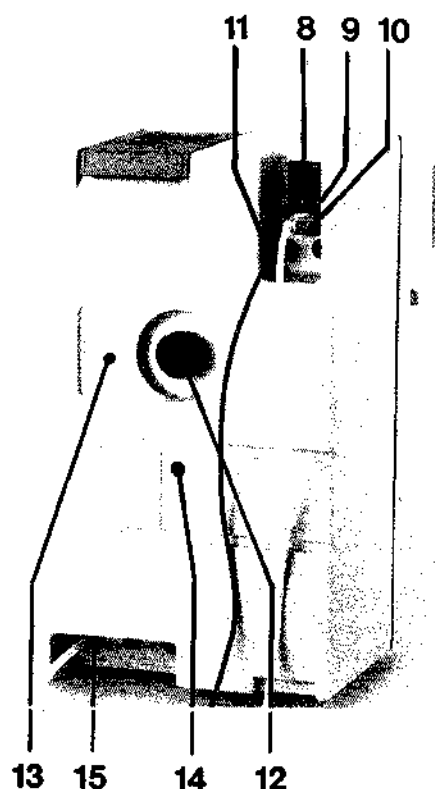
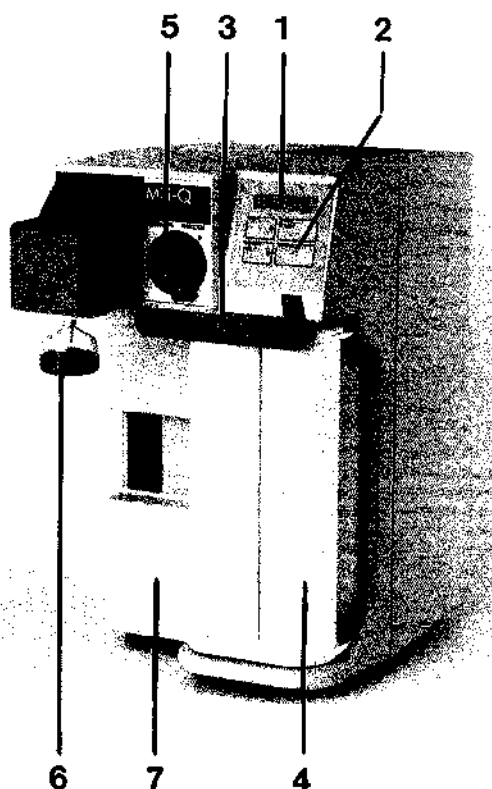
As a result of attention to design detail, plus strict selection and testing of materials of construction, resins, and other purification media, the system consistently produces water which exceeds Type 1 standards for Reagent Grade Water.

The Milli-Q Plus system utilizes a patented purification pack concept. The design of this pack ensures minimal dead water volume and as a consequence extremely low TOC values in the purified water. The pack is constructed of pure polypropylene and is heat welded to minimize extractables associated with gluing.

The pack concept makes maintenance of the system extremely easy. The system indicates when the pack requires to be changed and this can be done quickly and easily without the use of any tools. The control box of the system utilizes a membrane keypad combined with an alphanumeric display. The alphanumeric display allows the user to monitor the status of the Milli-Q Plus system at all times.

## A. Introduction

### 2. External Features



#### Front View (left)

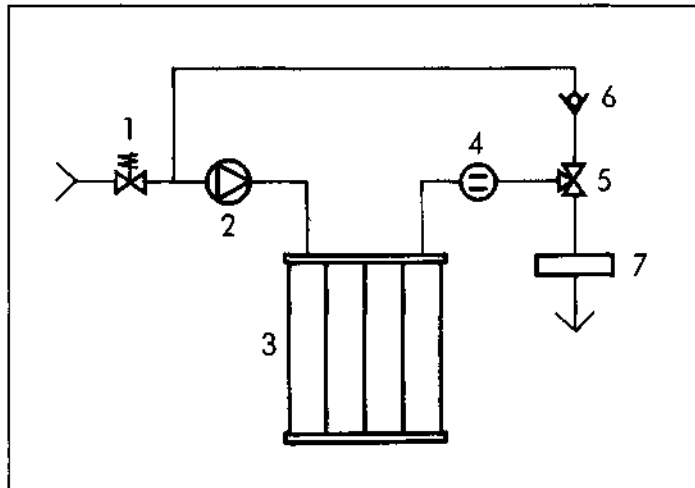
1. Alphanumeric display
2. Control keypad
3. Pack lock/unlock arm
4. Purification pack
5. Manual delivery valve (ultrapure water from point of use)
6. Pure water point of delivery - Millipak Final Filter Unit
7. Front cabinet

#### Rear View (right)

8. On/off switch
9. Fuse holder
10. Power cable
11. Remote control cable
12. Cabinet locking nut
13. Serial number/catalogue number
14. Plug for entry of wall mounting rod option
15. Feed water inlet

## A. Introduction

### 3. Schematic



#### Flow Schematic

- 1 - Inlet solenoid valve
- 2 - Pump
- 3 - Purification pack
- 4 - Resistivity sensor
- 5 - 3-way valve (manual)
- 6 - Check valve
- 7 - Millipak Filter Unit

## A. Introduction

### 4. Dimensions

Height	495 mm
Depth	433 mm
Width	297 mm
Weight (without purification pack)	9.3 kg
(with purification pack installed and full of water)	15.4 kg

## **A. Introduction**

### **5. Function of Components/Controls**

#### **On/Off Power Switch**

This switch, located on the rear side of the unit, controls the power to the control box. The power inlet socket is located below the ON/OFF switch. This socket has a built in fuse holder which contains the main fuse plus a spare.

#### **Pump**

This magnetic drive gear pump provides a draw-off flow rate of 1.5 l/min. A built-in pressure relief valve regulates discharge pressure to 2.8 bars (40 psi).

#### **Sensor**

The sensor, located at the outlet of the purification pack, is electrically connected to the PC board. The sensor continuously measures the resistivity of the product water as it exits the pack.

#### **Meg-O-Meter Display**

Resistivity of the water is displayed on the alphanumeric display as product \_\_\_\_, \_\_ Megohm x cm.

The unit is internally temperature-compensated to normalize readings to 25° C.

#### **Three Way Point-of-Use Valve**

This PVDF valve, located behind the front panel of the unit, is manually operated by the knob on the front panel of the unit. This valve has two positions: RECIRCULATION - where the water is directed through the system's recirculation loop; or PRODUCTION - where the water is directed through the final filter to the point-of-use.

#### **CONTROL KEYBOARD**

##### **Operate/Standby, Operate Mode**

This button, when first depressed, will switch the system to the operate mode. During operate mode the inlet solenoid valve is open and the pump is running. If the manual point-of-use valve is in the RECIRCULATION position, water will recirculate around the system's internal recirculation loop. If the point-of-use valve is open in the PRODUCTION position, water will be delivered through the point-of-use. During operate, the display will show the resistivity of the purified water as product \_\_\_\_, \_\_ Megohm x cm.

If this resistivity is less than the set point of 14 Megohm x cm then the display of product \_\_\_\_, \_ Megohm x cm will flash on and off. When the resistivity builds to greater than the set point, the display of product \_\_\_\_, \_ Megohm x cm becomes a steady display.

The set point is adjustable (see Section D., Maintenance, 4., Set Point Adjustment, in this manual).

#### **Standby Mode**

During normal operate mode, if the button is depressed, this will switch the system to the standby mode.

During standby the inlet solenoid valve is closed and the pump is not running. Therefore, the system is not producing water.

During standby the system will switch on **automatically** every 55 minutes and recirculate for 5 minutes. This inhibits bacterial growth and degradation of pure water

#### **Auto-Test**

Each time the unit goes into operate mode, it carries out an automatic test on the accuracy of the resistivity measuring system. The test result is displayed for 4 seconds before the display changes to show product water resistivity. The display should show TEST: 15 Megohm x cm.

#### **Temperature**

During the standby mode, if the temperature button is depressed, the display will show the calibration temperature of 25° C. (If 25° C is not displayed then there is a calibration problem.)

During operate mode, if the button is pressed, the unit will display the current temperature of the water in the system in ° C.

#### **Power Light**

This light, when illuminated, indicates that the unit is switched on.

#### **Exchange Pack Light**

When this lamp is flashing, it indicates that the pack has been installed longer than 4 months and should be exchanged. (The exchange interval is set at 4 months, but can be changed to 6 months (see Section D., Maintenance, 5., Pack Replacement Frequency Setting, in this manual).

When this lamp is steadily illuminated, it indicates the absence of the pack; or if the pack is there, then it has not been pushed fully into place.

## ALPHANUMERIC DISPLAY

Keyboard	Mode	Display
Press OPERATE/STANDBY	Operate	The first display is Test ___, _ Megohm x cm (for 4 sec), then product ___, _ Megohm x cm
Press OPERATE/STANDBY	Standby	Standby
Automatic recirculation 5 minutes every 55 minutes	Standby	Recirculation
Press TEMPERATURE during.....	Operate	Temperature: __° C (temperature of water in system)
Press TEMPERATURE during.....	Standby	Temperature: 25° C (calibration temperature)

## Fault Displays

Fault in resistivity sensing system	Test incorrect
Fault in temperature sensing system	Temperature: < 0° C Temperature: > +° C

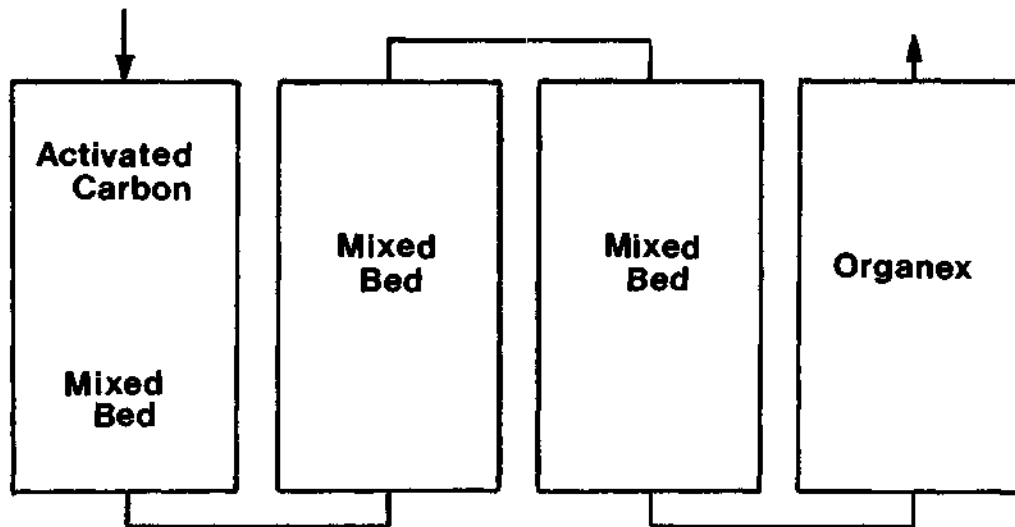
(See Section D., Maintenance, in this manual.)



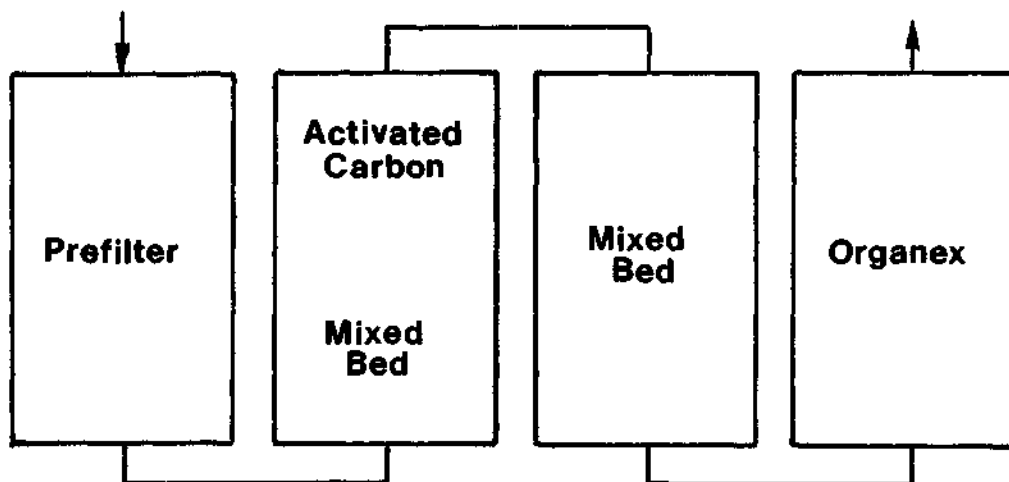
## PURIFICATION PACK

The purification pack utilizes a chain of purification media to polish the feed water to high quality:

QPAK1 (to be used if feed water has been pretreated by reverse osmosis or distillation)



QPAK2 (to be used if feed water has been pretreated by deionization)



## Final Filter Unit

The pre-sterilized, vented microporous membrane filter unit is used as a final filter at the point-of-use. It removes micro-organisms and particulate matter larger than 0.22  $\mu\text{m}$ .

## **B. Installation**

### **1. Unpacking**

**Unpack the system carefully from its container.**

**Verify Contents:**

1. Milli-Q Plus system
2. Operation and maintenance manual
3. Power cable
4. Cover for point-of-use
5. 3 meters of feed water tubing - white, 8 mm O.D.
6. Roll Teflon tape
7. 1/4" male - 8 mm diameter tubing adapter - feed water
8. 1/2" female to 1/4" female reducing bushing with stainless steel filter screen
9. 1/4" male - 1/4" hose barb
10. 2 meters tubing, 12 mm O.D.

#### **Purification Pack**

The system requires a purification pack which is not included with the unit. The purification pack must be ordered separately. The choice of purification pack depends on feed water quality.

#### **Feed Water**

Reverse Osmosis or distilled - use CPMQ 004 R1  
Deionized - use CPMQ 004 D2

**Pack Contents**

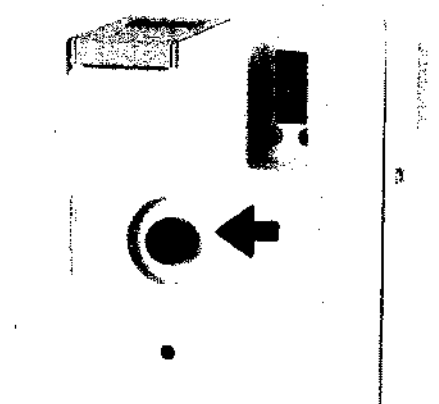
1. Purification pack
2. Millipak final filter unit

## B. Installation

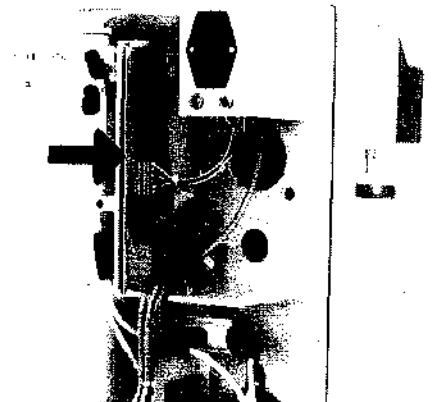
### 2. Battery Activation

Before making water, or electrical connections (initial startup) the battery, to power the system memory, must be activated.

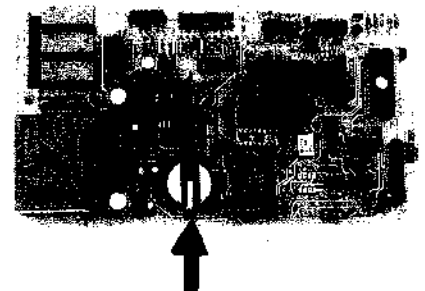
Open rear cabinet cover by  
unlocking cabinet locking nut



Pull out PC board slightly



Hold battery with protective  
cloth (to avoid touching it  
directly) and pull out small  
plastic sheet located under-  
neath the battery



Push PC board back, replace Rear cover and tighten lock nut.

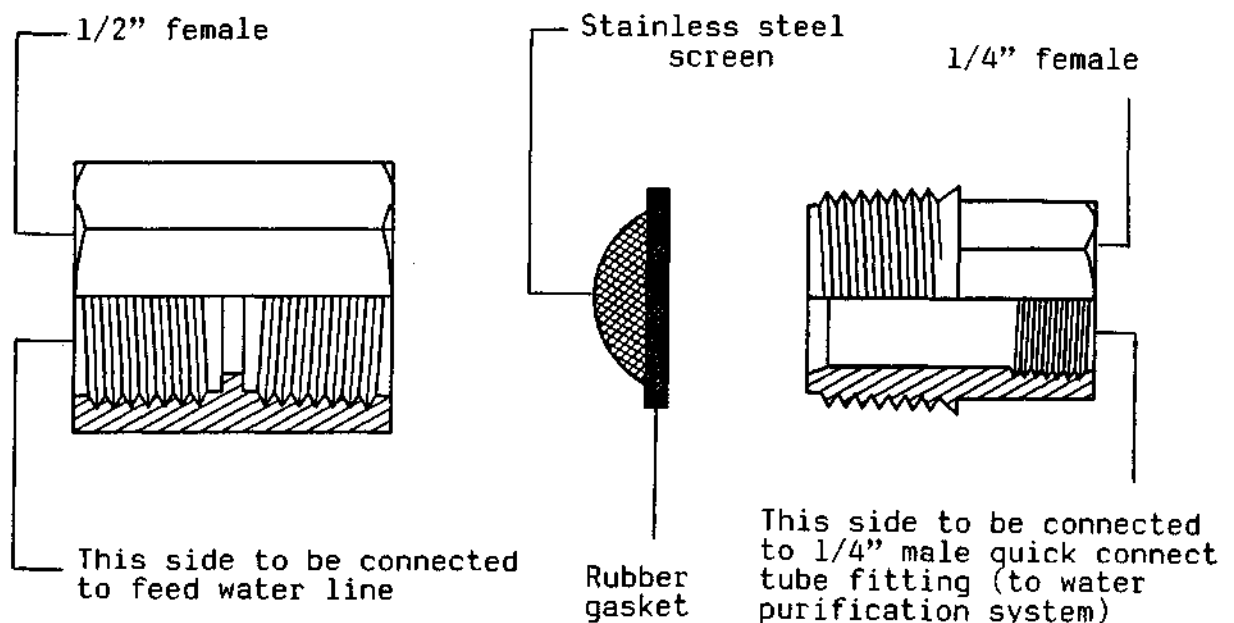
Note: Switch on power immediately after battery activation.  
Switch system to ON for a few seconds. This will  
initialise the microprocessor and avoid discharging  
the battery.

### 3. Water Connection

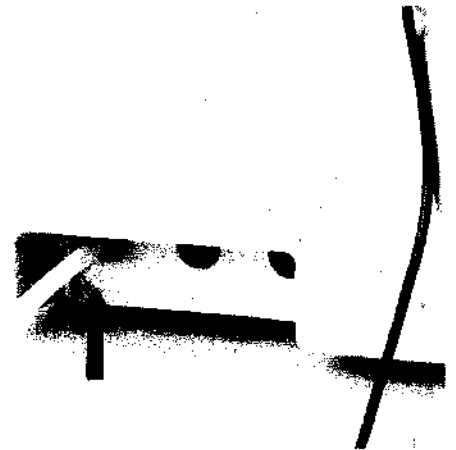
In order to protect the Milli-Q Plus Unit from any gross particulate matter in the feed water line, a 1/2" female to 1/4" female reducing bushing, which incorporates a stainless steel filter screen, is supplied with the system.

This fitting should be used to connect the system to the feed water line. The fitting should be periodically dismantled and the filter screen should be rinsed in running water to remove entrapped particulate material.

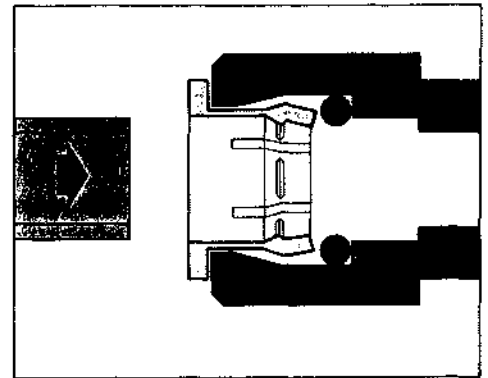
For details, please refer to exploded view shown below.



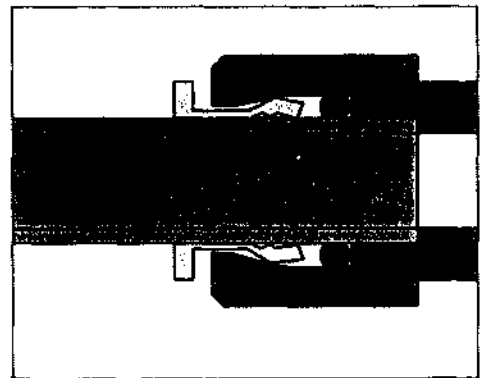
The system has a single "quick connect" connection located at the rear of the system.



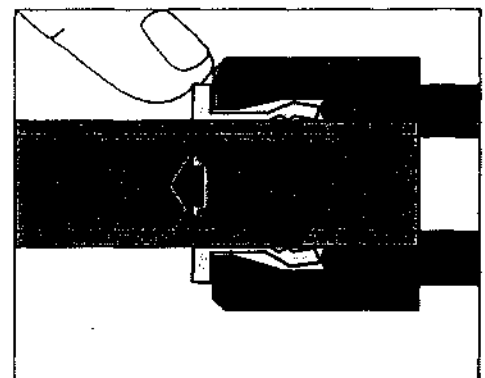
Simply push-in tube to attach



Tube is secured in position



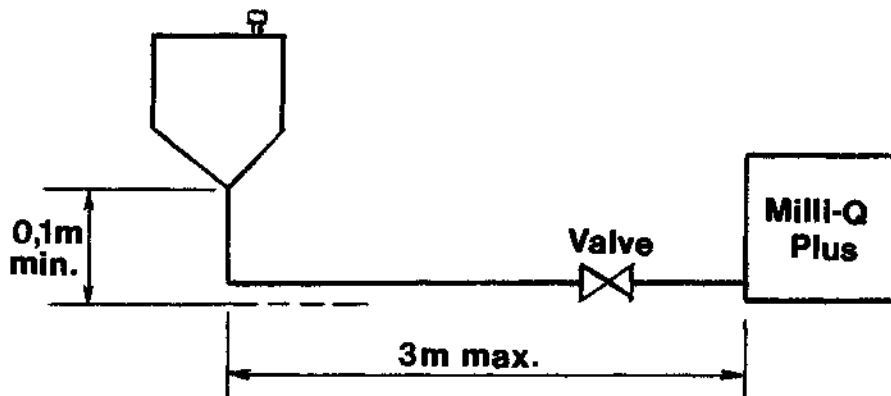
Push-in collet to release tube



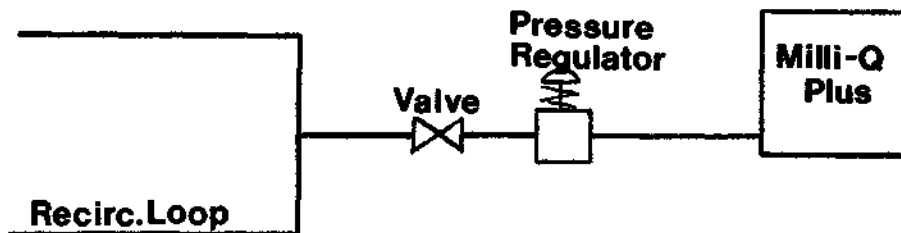
### Isolating Valve

A valve should be installed on the inlet water line to facilitate maintenance of the Milli-Q.

### Tank feed



### Distribution Loop Feed



### Feed Water Pressure

The pump requires a positive feed of water. 10 cm head is sufficient. The maximum pressure is 1 bar (15 psi). If the feed pressure is higher than 1 bar then a pressure regulator should be fitted. Pressure regulator - Cat. No. ZFMQ 000 PR (full details in Accessories Section).

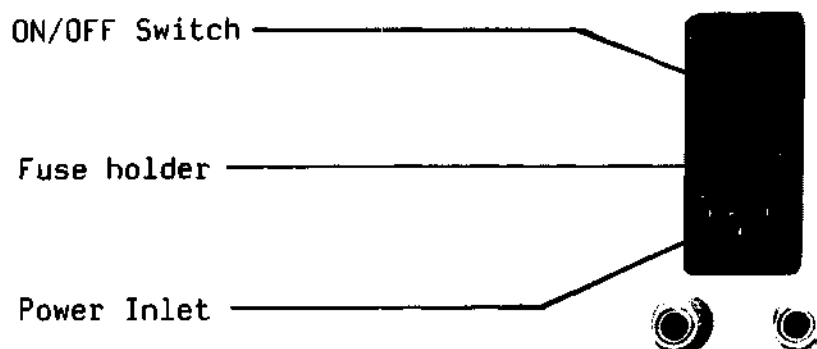
**CAUTION:** Although the pump is self-priming, it should **never** be started without an adequate water supply.

### Feed Water Temperature

Feed water temperature must be between 5° C and 40° C.

## B. Installation

### 4. Electrical Connection



Main Connection: 110-120 V/60 Hz (0.8 A) (System Cat. No. ZD52 115 84)  
Grounded  
220-240 V/50 Hz (0.4 A) (System Cat. No. ZFMQ 050 01)  
Grounded

Power: 85 VA maximum

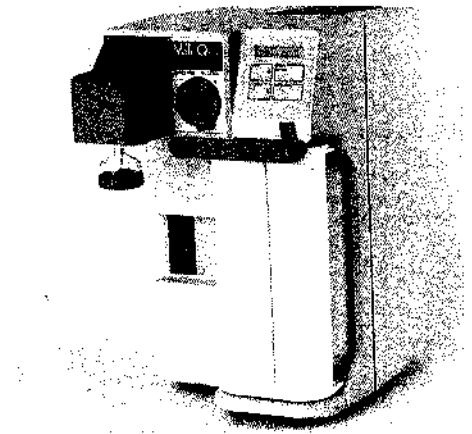
Fuse: 0,5 A (220 - 240 V)  
1A (110 - 120 V)

Remote Standby: Normally closed switch plugged in the socket,  
5 V/10 mA.

## **B. Installation**

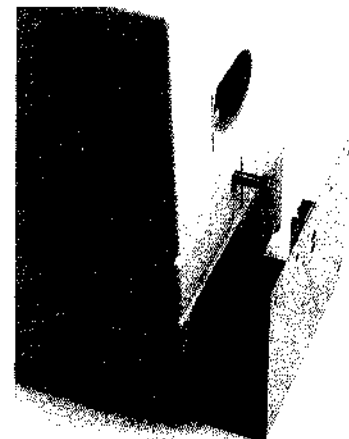
### **5. Bench/Wall Mounting**

The system is compact, and has four rubber feet for easy installation on the laboratory bench.



Alternatively, the system can be mounted on the wall using the wall mounting bracket accessory, Cat. No. ZFMQ 00W MB

Full mounting instructions included with the mounting bracket.

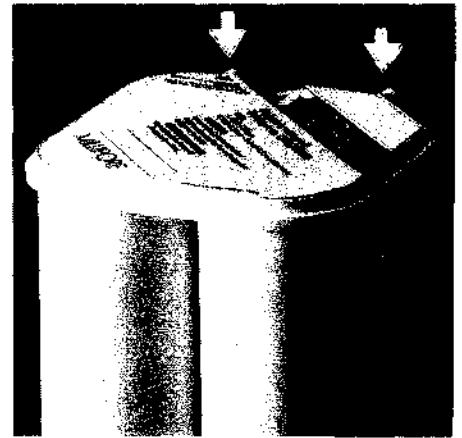




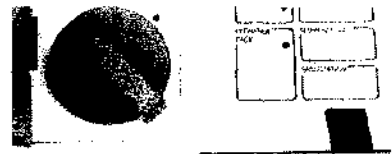
## B. Installation

### 6. Pack Installation

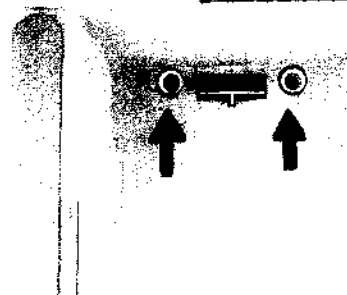
Remove plugs from pack.



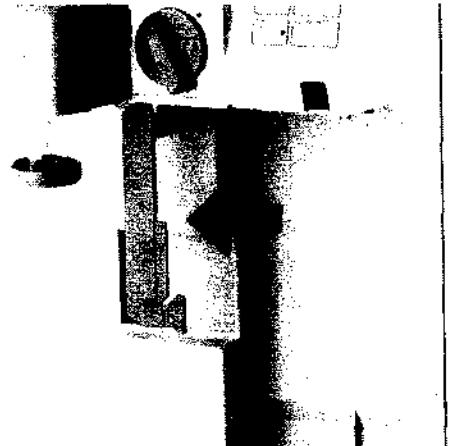
Remove plugs from pack receptor inside Milli-Q.



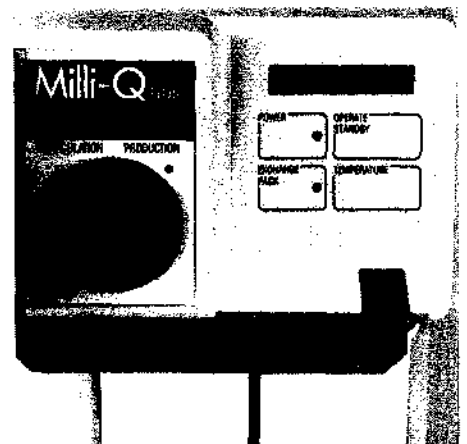
Unlock pack retaining arm on Milli-Q by pushing down on tab (marked press) and swinging arm to the left.



Moisten O-rings with water. Maintain position of Milli-Q with left hand. Push pack into place with right hand.



Swing locking arm back into place. By pushing gently on the underside of the arm it will snap back into original position.



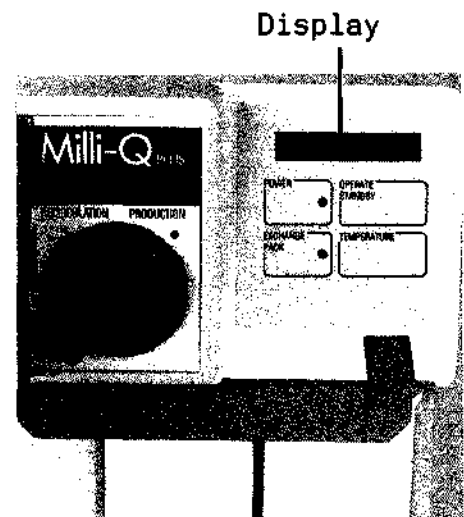
## B. Installation

### 7. Initial Start Up

- Checklist:**
- battery in place and activated
  - water connected to rear of unit
  - power cable plugged into rear socket
  - pack inserted/handle locked
  - isolating valve on feed water line open
  - switch system ON/OFF switch to ON position to initiate Microprocessor

### Control and Display Layout

- "battery" is displayed 2 seconds every 7 seconds
- switch system ON/OFF to OFF position for 3 seconds to reset battery display



### Air Purge

In order to purge all of the air from a newly installed pack it is necessary to run some water to drain.

### New Pack in Place - Checklist OK

Connect adapter and tubing from point-of-use to drain.

Open point-of-use valve. Turn to PRODUCTION.

Press OPERATE/STANDBY to switch the system to operate mode.

Allow water to collect in a vessel with the tubing submerged in the vessel.

Allow system to run for 5 minutes to vessel.

Close point-of-use valve. Turn to RECIRCULATION.

Allow system to recirculate for 5 minutes.

Open point-of-use valve. Turn to PRODUCTION.

Allow system to run to vessel for 2 minutes.

Close point of use valve. Turn to RECIRCULATION.

Press OPERATE/STANDBY to switch to standby mode.

Remove adapter and tubing from point-of-use.

Put 1-2 turns of Teflon tape on threaded end of Millipak final filter unit.

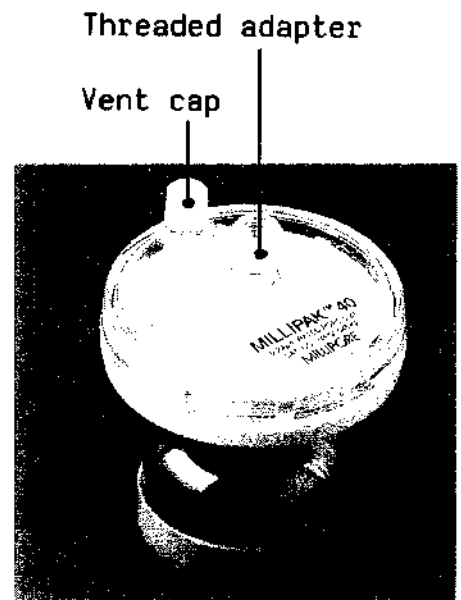
Screw Millipak firmly into point-of-use adapter until the vent cap is oriented to the system.

Fit Millipak inside point-of-use cover.

Open vent cap on Millipak.

Turn point-of-use valve to PRODUCTION.

Press OPERATE/STANDBY to put the system into operate mode.



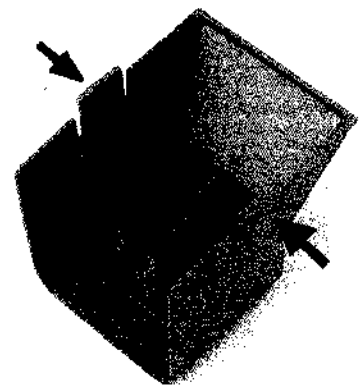
Allow water to purge air from Millipak.

Close Millipak vent by replacing cap.

Close point-of-use valve. Turn to RECIRCULATION.

Press OPERATE/STANDBY to go into standby mode.

Press on tabs at side of point-of-use cover.



Position point-of-use cover and allow tabs to pop into place.



The system is now ready for use and is sitting in the standby mode. Please proceed to the next section of the manual which describes the normal functions and operation of the system.

## C. Operation

### 1. Auto Test

When the operate button is pressed, after a standby mode, the unit performs an automatic test of the accuracy of the resistivity sensing system.

Display will show test resistivity for 4 seconds. This is preset at  $15 \text{ Megohm} \times \text{cm}$   
 $\pm 1 \text{ Megohm} \times \text{cm}$

After this 4 second period the display will switch to show the actual resistivity of the water in the system at that moment.

### 2. Operate

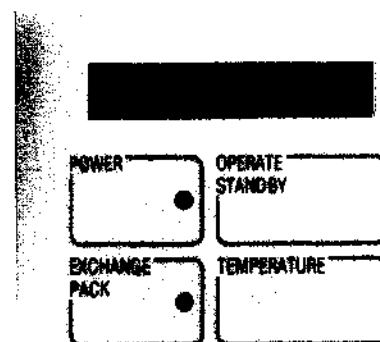
After the 4 second display of the auto test resistivity the unit will display the actual resistivity in the system.

If this value is below the set point ( $14 \text{ Megohm} \times \text{cm}$ ) resistivity, the value will **flash** on and off until the resistivity builds to the pre-adjusted set point resistivity.

Resistivity will steadily build to a level above the set point. Resistivity is now shown as a **steady display**.

### 3. Standby

During periods of no demand, the user can press the OPERATE/STANDBY button to convert the system to STANDBY mode (when running in operate mode). During STANDBY the display will show STANDBY.



#### **4. Auto Recirculation (Intermittent)**

During STANDBY the system will automatically recirculate water for a period of 5 minutes every one hour (or 3 hours if selected). During this period the display will show RECIRCULATION.

Intermittent recirculation discourages bacterial proliferation, and maintains water quality levels between uses.

#### **5. Temperature**

The temperature button can be depressed during operate mode. This will display the current temperature of the water in the system in ° C.

The display will last 4 seconds when TEMPERATURE button is depressed. During standby mode, the unit will display the auto test temperature which is 25° C. Display: TEMPERATURE 25° C.

The temperature display range is 0° C to 40° C. Outside of these limits the display will show TEMPERATURE < 0° C, or TEMPERATURE > +° C

This may be a true reading indicating a problem with feed water temperature.

Check feed water temperature. If feed water temperature is satisfactory, refer to troubleshooting.

#### **6. Battery**

The display may show BATTERY followed by a normal function display - RECIRCULATION, etc. This sequence will be repeated (battery 2 seconds, function 5 seconds). This indicates that the battery is exhausted and should be replaced. (As in Section B., Installation, 2., Battery.)

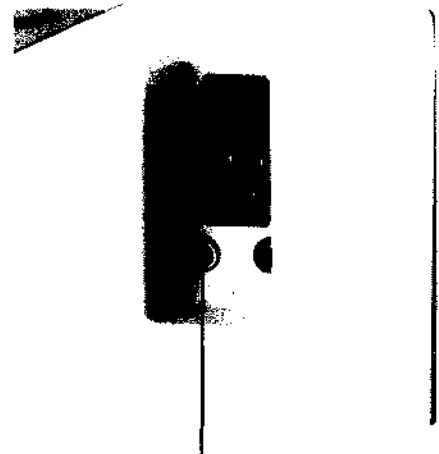
The battery is used to maintain some data in the event of a power failure. During a power cut, the battery stores the data telling it which function it was performing at the time of the power cut. When power is restored, the unit will restart in this function. The battery also stores elapsed time from pack installation.

## 7. Remote Standby

When the system is connected to a remote controlling unit, via the inlet jack plug at the rear of the unit, the display will show REMOTE STANDBY. (Remote control, e.g., clinical analyzer.) The Milli-Q Plus should initially be switched to operate mode by the user. In this mode the remote unit is able to switch the Milli-Q Plus from OPERATE to STANDBY and vice versa when the remote unit requires water.

During REMOTE STANDBY, the system will continue to perform automatic intermittent recirculation as in normal standby. During this period, the unit will show RECIRCULATION, as normal.

When the contact from the remote unit is closed, the Milli-Q Plus will run through its normal sequence of AUTO TEST, ACTUAL RESISTIVITY flashing till set point is reached, etc.



Jack plug for remote control

## 8. Pack Replacement

The orange EXCHANGE PACK light will flash to indicate that it is time to replace the purification pack with a new one.

If the EXCHANGE PACK light is steadily illuminated, it indicates that the pack sensing microswitch is open. This indicates the absence of the pack, or if the pack is installed then it has not been pushed fully into place.

Switch the Milli-Q Plus to STANDBY mode

Unlock pack retaining arm.

Maintain Milli-Q Plus in position with left hand. Pull out pack smoothly with right hand.

Dispose of old pack.

Remove caps on new pack.

Moisten O-rings.

Maintain Milli-Q Plus in position with left hand. Slide pack into position with right hand.

Relock pack retaining arm.

Press OPERATE/STANDBY.

Refer to Section C., Operation, for sequence of steps from this point, Normal Operation.

#### Pack Replacement Frequency

See Section D., Maintenance, 5., Pack Replacement Frequency Setting.

### **9. Final Filter (Millipak) Replacement**

(Refer also to Section B., Installation, 7., Initial Start-Up)

The final filter unit should be replaced when the flow rate decreases to an unacceptable level (0.5 l/min).

Press OPERATE/STANDBY to switch the system to STANDBY mode.

Press on tabs at side of point-of-use cover. Remove point-of-use cover and lay aside.

Unscrew Millipak from final 1/4" female fitting and dispose of Millipak.

Wrap Teflon tape once around the threads on the 1/4" NPTM end fitting on Millipak.

Screw Millipak into 1/4" female fitting.

Press OPERATE/STANDBY to switch the system to operate mode.

Loosen vent cap on top of Millipak final filter unit (to vent air from filter).



Open point-of-use valve to PRODUCTION position.

Allow water to purge air from vent.

Close the vent.

Close point-of-use valve switch to RECIRCULATION.

Press OPERATE/STANDBY to switch the system to STANDBY.

Replace Millipak inside point-of-use cover and replace point-of-use cover in position by pressing on tabs on side of cover and allowing them to pop into place.

## **D. Maintenance**

### **1. Access to PC Board**

(Refer to Section B., Installation)

Remove rear cabinet by unlocking the cabinet locking nut at rear.

Disconnect 5 traces.

Pull out PC board.

### **2. Battery Replacement**

Battery lifetime: 5-8 years when system is powered for 24 hrs/day;  
2-3 months when system power is off.

System Memory: when battery is exhausted, the system will store data (FUNCTION position and elapsed time from pack insertion) for only 20 seconds after power is cut.

The display BATTERY (flashing) indicates an exhausted battery, and that power has been off for longer than 30 seconds. This means stored data has been lost (elapsed time, etc.).

Replace exhausted battery with a fully charged one.

Battery replacement procedure: see Section B., Installation, 2., Battery Activation.

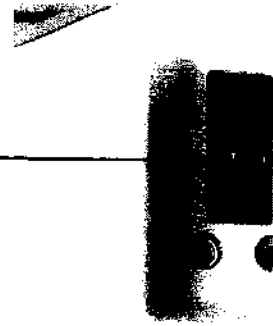
### 3. Fuse Replacement

If power lamp is off, check fuses as follows:

Main ON/OFF switch, rear of unit, and socket on ring main.

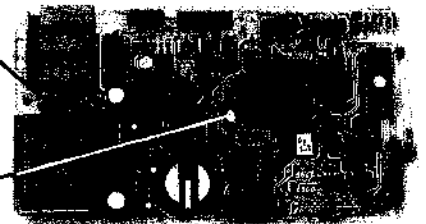
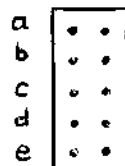
Check main fuse. Remove main cable. Remove fuse insert holder.

Replace main fuse by spare found inside fuse insert holder.



Check PC board fuse. Replace if necessary.

PC board fuse: 220-240V version has 0.1 amp.  
115V version has 0.25 amp.



### 4. Set Point Adjustment

The resistivity set point is preadjusted to 14 Megohm x cm. This can be adjusted from 1 Megohm x cm to 18 Megohm x cm, but should be done by a Millipore service engineer.

Call Millipore for assistance.

## 5. Pack Replacement Frequency Setting

The EXCHANGE PACK light will begin to flash after the pack has been in place for longer than a preset time.

The pack should be changed for optimum performance in terms of T.O.C. and microorganisms, even though all ion exchange Resin may not be 100% exhausted.

There are two preset time intervals available: 4 months, or 6 months.

Jumper (Refer to illustration in section 3., Fuse Replacement)

Jumper (position b) in place gives 4 months preset time interval.  
Jumper removed gives 6 months preset time interval.

## 6. Changing the Frequency of Automatic Recirculation

In order to maintain water quality, the system will automatically recirculate water for 5 minutes every 55 minutes when it is in STANDBY mode. If you wish, you can change the setting so that water will recirculate for 5 minutes every 3 hours.

To change setting:

- Open rear cabinet and pull out PC board as described in section B.2.
- Remove jumper A (see illustration in section D.3.)  
Note: If this jumper is connected to the PC board, water will recirculate for 5 minutes every 55 minutes. If jumper is removed, water will recirculate for 5 minutes every three hours.
- Replace PC board and close rear cabinet.

## 7. Troubleshooting

### Fault: Initial AUTO TEST:

Resistivity is not  $15 \text{ Megohm} \times \text{cm} \pm 1 \text{ Megohm} \times \text{cm}$

When the OPERATE/STANDBY button is first pressed, the unit carries out an internal check on the accuracy of its resistivity monitoring system.

The display should show  $15 \text{ Megohm} \times \text{cm} (\pm 1 \text{ Megohm} \times \text{cm})$  for 4 seconds).

If the value by test is less than  $14 \text{ Megohm} \times \text{cm}$  or more than  $16 \text{ Megohm} \times \text{cm}$ , then the display will show TEST INCORRECT for 2 seconds.

Then actual resistivity in the system for 4 seconds.

This sequence of TEST INCORRECT/ACTUAL RESISTIVITY is repeated.

This fault may be due to a problem of calibration of temperature or resistivity.

### To Check Test Temperature Calibration

- . Put system in STANDBY mode.
- . Press TEMPERATURE button - display test temperature.
- . The test temperature is  $25^{\circ} \text{C}$ .
- . If the display shows anything other than  $25^{\circ} \text{C}$  then you will need to recalibrate the temperature setting.

## To Recalibrate Temperature

Remove rear cabinet.

Remove Jumper C (this locks PC board to TEST mode).

Press temperature button and maintain.

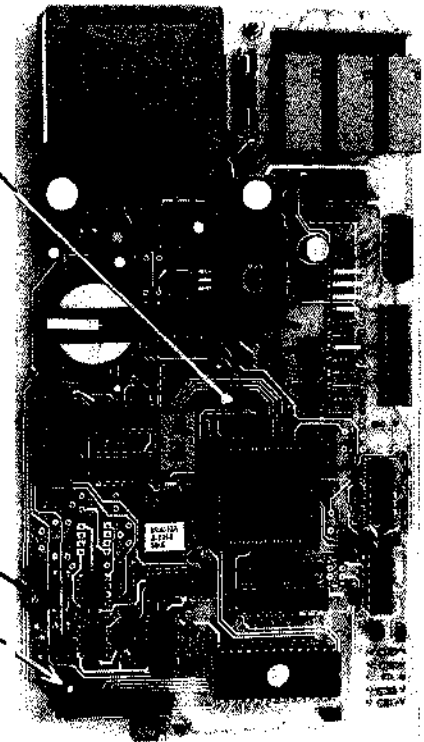
Display shows the TEST calibration TEMPERATURE (should be 25° C).

If not 25° C, adjust temperature (TEMP) potentiometer as shown until 25° C is displayed.

Release TEMPERATURE button on keypad.

Displays TEST RESISTIVITY (should be 15 Megohm x cm).

F/RES



If display does not show TEST: 15 Megohm x cm after Temperature Recalibration:

Adjust RESISTIVITY (F/RES) potentiometer until display shows 15 Megohm x cm.

Replace test Jumper C in position.

Replace rear cover and lock in place.

**Fault:** Display shows TEMPERATURE < 0° C or TEMPERATURE > + ° C for 2 seconds, followed by product XX,X Megohm x cm for 2 seconds.

Check the TEST TEMPERATURE as previously described for Test Temperature Calibration.

Readjust to 25° C if incorrect.

Check if the temperature of your feed water is elevated as this could be a true reading of feed temperature > 40° C.

If the temperature of the feed water source is satisfactory then call Millipore. This indicates a problem with the thermistor.

## E. Technical Information

### 1. Components

<u>Components</u>	<u>Materials of Construction</u>
Cabinets front-rear	Polypropylene
Internal skeleton	Noryl (polyamide)
Hardware (screws, nuts, washers)	Stainless steel
3-way valves	PVDF
O-rings	Nitrile - EPDM
Microsensor tips	316 S.S. electropolished
Check valve	Stainless steel and copolymer acetyl resin
Valve operating handle	
Pack locking handle	
Sanitization port access lid	Polyamide
Point-of-use cover	
Tubing	Polyamide
Pump Body	Stainless steel
Pump materials (contacting fluid)	Ryton, Teflon, 316 S.S.
Inlet solenoid valve	316 S.S.
Point-of-use fittings	PVDF
Point-of-use tubing	PTFE
Purification pack	Polypropylene



## 2. Specifications

### Dimensions

Height	495 mm
Width	297 mm
Depth	433 mm

### Connections

Feed connector	Polyamide tubing 8 mm O.D. quick connect fitting
----------------	---

### Electrical Requirements

220-240V/50Hz, 85 VA (0,4A) Grounded  
Fuse size: 0.5 amp/250V "Slow Blow"

or

110-220V/60Hz, 85 VA (0,8A) Grounded  
Fuse size: 1 amp/250V "Slow Blow"

### Feed Water Requirements

Feed water should be preteated by:

- 1) Reverse Osmosis
- 2) Distillation
- 3) Deionization

### System Performance

Water production rate up to 1.5 l/min. Product quality exceeds all standards for type 1 reagent grade water.

**Note:** Product water quality will degrade if stored.

### Pump and Motor

Type	Positive displacement magnetic gear pump
Electrical	220-240V/50Hz 0.25 amps 115V/60Hz 0.43 amps
Maximum discharge pressure	60 psi (4.0 bar)
Bypass adjustment	40 psi (2.8 bar)

### 3. Ordering Information

<u>Description</u>	<u>Catalogue Number</u>
--------------------	-------------------------

Milli-Q Plus system 220-240V/50 Hz	ZFMQ 050 01
------------------------------------	-------------

Milli-Q Plus system 110-120V/60 Hz	ZD52 115 84
------------------------------------	-------------

#### Expendables

Purification pack 1 Feed water RO or distilled, 1/pk	CPMQ 004 R1
---	-------------

Purification pack 1 with final filter Feed water RO or distilled, 1/pk	CPMQ K05 R1
---	-------------

Purification pack 2 Feed water deionized, 1/pk	CPMQ 004 D2
---	-------------

Purification pack 2 with final filter Feed water deionized, 1/pk	CPMQ K05 D2
---	-------------

Millipak GV final filter unit 0.22 um, sterile, 1/4" NPTM inlet with filling bell, 2/pk	MPGL 04S K2
---	-------------

#### Accessories

60 L reservoir complete with float switch, bacterial filter on air vent, sanitary drain line and all connections to RO and Milli-Q systems	ZFRE 000 60
--	-------------

Pressure regulator polypropylene, 1/4" NPTF, with pressure gauge (Two 1/4" NPT x 8 mm tube connectors, are included to connect this regulator to the feed line)	ZFMQ 000 PR
---	-------------

Pressure switch	FTPF 006 08 FTPF 006 09
-----------------	----------------------------

System wall mounting bracket	ZFMQ 00W MB
------------------------------	-------------

#### 4. Warranty

Millipore Corporation (the "Company") warrants its Water purification products against defects in materials and workmanship when used in accordance with the Company's instructions for use, for a period of one year from date of purchase of the products. The company's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period provided the customer notifies Millipore promptly of any such defect. The Company reserves the right to charge the user for the labor costs involved in repairing or replacing any defective part after 90 days from installation. The Company further reserves the right not to honor this warranty if it believes said warranty is being abused. MILLIPORE MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THERE IS NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. The company shall not be liable for consequential damages resulting from economic loss or property damage sustained by any customer from the use of its product.

While Millipore personnel are available to advise customers concerning general applications of the Company's products, oral representation are not warranties with respect to particular applications and should not be relied upon if inconsistent with the terms stated herein. Any variation of these terms must be in writing and must be signed by an officer of Millipore.

These warranty conditions do not affect the statutory rights of the purchaser.

Catalogue No. EU303/U. Printed in France, 1/90. Copyright C 1990, Millipore Corporation, U.S.A. Millipore is a registered trademark of Millipore Corporation.

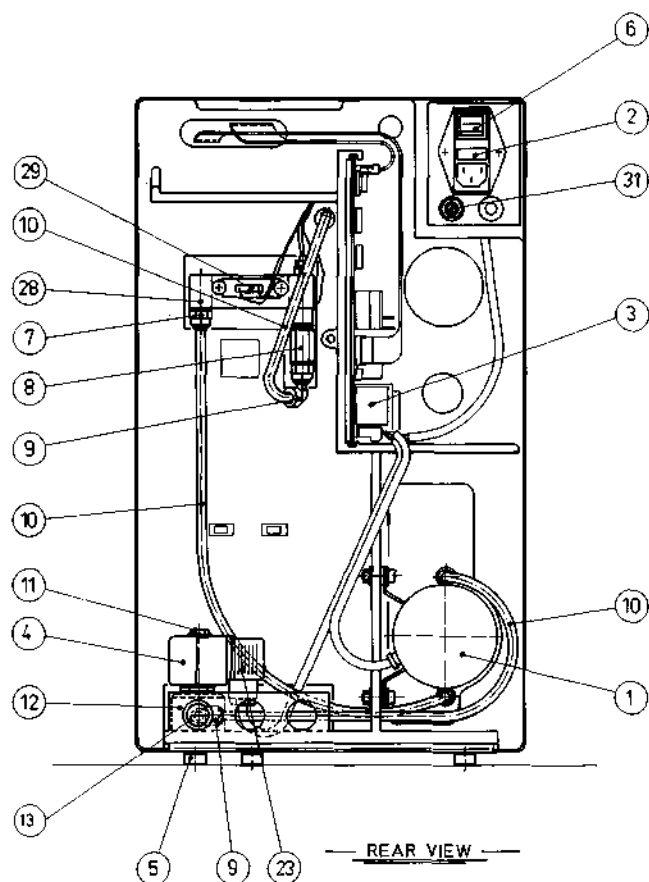
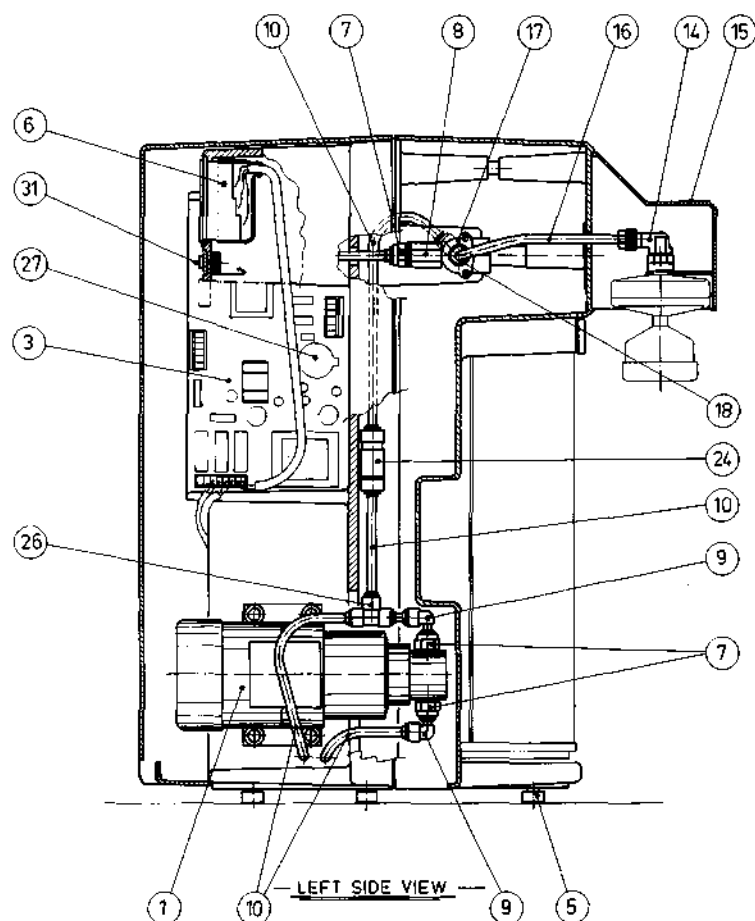
Milli-Q, QPAK, Millipak and Organex are trademarks of Millipore Corporation.

# Milli-Q® Plus Reagent Grade Water Purification System

Catalogue Numbers  
ZFMQ 050 01 (230 V/50 Hz)  
ZD52 115 84 1115 V/60 Hz)

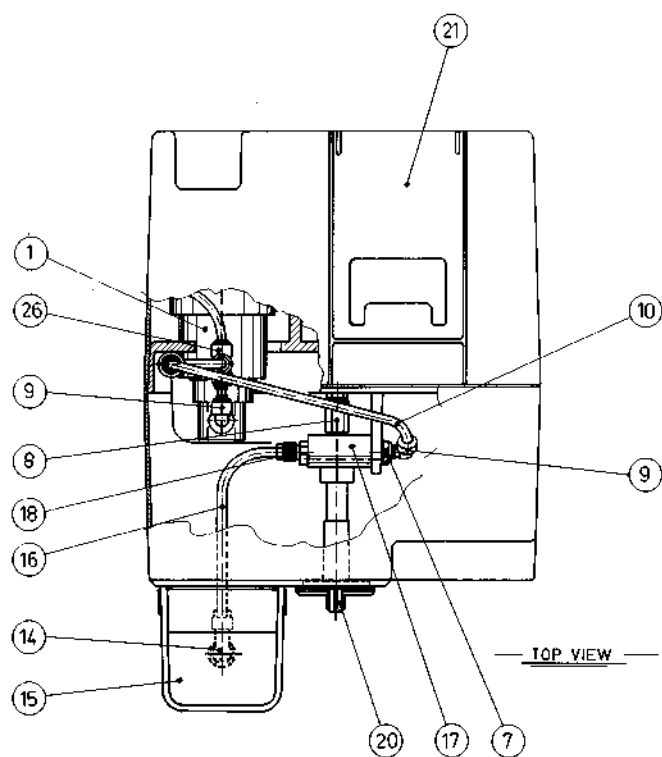
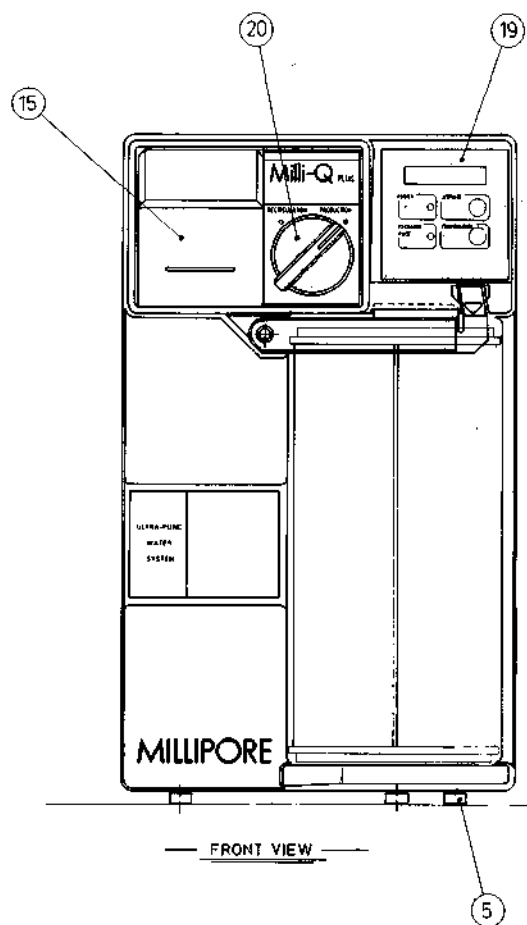
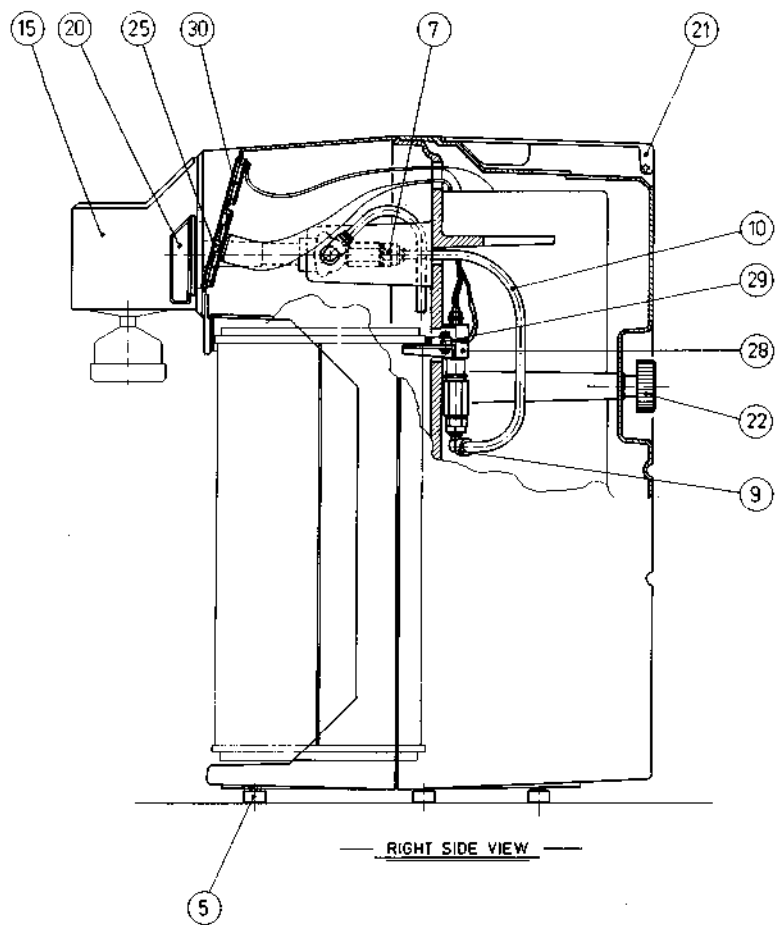
## Components and Spare Parts

## MILLIPORE



## LIST OF COMPONENTS

ITEM	DESCRIPTION	CATALOGUE NO.		ITEM	DESCRIPTION	CATALOGUE NO.
		MILLI-Q PLUS 220/240 V - 50 Hz CAT. NO. ZFMQ 050 01	MILLI-Q PLUS 115 V/60 Hz CAT. NO. ZD52 115 84			
1	IWAKI PUMP	FTPF 01782	FTPF 02473	20	3-WAY VALVE KNOB	FTPF 02558
2	FUSE 5x20 mm	FTPF 00306	FTPF 00756	21	TOP DOOR	FTPF 02556
3	CONTROL P.C. BOARD	ZF20 000 50	ZF20 000 51	22	KNURLED KNOB	FTPF 02561
4	SOLENOID VALVE COIL	FTPF 02467	FTPF 02468	23	SOLENOID VALVE CONNECTOR	FTPF 00396
5	RUBBER PAD	FTPF 02560		24	CHECK VALVE	FTPF 02718
6	POWER SUPPLY SOCKET	FTPF 01562		25	KEYBOARD P.CIRCUIT	FTPF 02605
7	MALE CONNECTOR 1/4" M-Ø6T	FTPF 02710		26	TEE 3xØ6T	FTPF 02715
8	ADAPTOR 1/4"F-1/4"F	FTPF 02716		27	LITHIUM BATTERY 3V	FTPF 02480
9	ELBOW Ø6 MALE - Ø6T	FTPF 02713		28	RESISTIVITY CELL 0.02 WITH PACK ADAPTOR	ZF20 000 10
10	POLYAMIDE TUBING Ø6/4	FTPF 02720		29	MICROSWITCH WITH CABLE	ZF20 000 20
11	SOLENOID VALVE MOUNTING KIT	FTPF 02569		30	LCD DISPLAY 16 DIGITS WITH CABLE	ZF20 000 30
12	SOLENOID VALVE BODY SST	FTPF 02466		31	JACK FEMALE CONNECTOR WITH CABLE	ZF20 000 21
13	MALE CONNECTOR 1/4"M-Ø8T	FTPF 02630				
14	PVDF ELBOW 1/4"F-Ø6T	FTPF 02723				
15	POINT-OF-USE COVER	FTPF 02557				
16	PTFE TUBING Ø6/4	FTPF 02724				
17	PVDF 3-WAY VALVE 1/4"	FTPF 01776				
18	PVDF CONNECTOR 1/4"M-Ø6T	FTPF 02722				
19	KEYBOARD STICKER	FTPF 02611				
					NOT SHOWN :	
					POLYAMIDE TUBING 8/6	FTPF 02721
					CORD LINE 220V	FTPF 01866
					CORD LINE 115V	FTPF 02471



# MILLIPORE

**For more information  
please call the nearest  
Millipore subsidiary**

**North America**  
Call toll-free 800-225-1380  
In Western States 800-632-2708  
In Canada 800-268-4881  
In Puerto Rico 809-747-8444  
In Toronto 416-678-2161  
In Massachusetts 617-275-9200

**Africa**  
St Quentin Yvelines -  
France (1) 30.45.70.00  
**Australia**  
Toll-free (0081) 222 - 111  
Sydney (02) 427 - 0511  
**Austria, USSR,  
Eastern Europe,  
Middle East**  
Vienna (0222) 82 89 26  
**Belgium - Luxemburg**  
Brussels (02) 242.17.40  
**Brazil**  
São Paulo (011) 548 - 7011

**Denmark**  
Tåstrup 42 - 52 88 11  
**Finland**  
Espoo 90 - 801 90 77  
**France**  
St Quentin Yvelines  
(1) 30.45.70.00  
**India**  
0812) 394 657  
**Italy**  
Vimodrone (02) 25078 - 1  
Roma (06) 57 33 600

**Japan**  
Tokyo (03) 474 - 9111  
**Mexico**  
Mexico (905) 576 - 9688  
**Norway**  
Oslo 02 - 67 82 53  
**Singapore**  
Singapore 2532733  
**Spain**  
Madrid (91) 729 03 00  
Barcelona (93) 325 96 16

**Sweden**  
Västra Frölunda 031-28 98 60  
Sundbyberg 08 - 98 89 60  
**Switzerland**  
Kloten (01) 814 13 63/65  
**The Netherlands**  
Etten-Leur (01608) 22000  
**UK - Ireland**  
Watford (0923) 816 375  
**West Germany**  
Eschborn (06196) 494 - 0  
**In all other Countries**  
Bedford - USA (617) 275-9200

## PLEASE NOTE

### PRODUCT IMPROVEMENT

Milli-Q Plus	Milli-Q UF Plus	Alpha-Q	
Milli-RO 6	Milli-RO 6 Plus	Milli-RO 10	Milli-RO 10 Plus

---

All units are now shipped with a rechargeable battery on the p.c. Board in place of the disposable battery on the initial series of units.

Please ignore the sections on BATTERY ACTIVATION and BATTERY REPLACEMENT in this Operation and Maintenance manual. These sections are no longer valid with the rechargeable battery.

#### New start up procedure

- . Switch on power to system at mains connection.
- . Flick ON/OFF switch at rear of unit to ON.
- . Display may show BATTERY if the battery is not fully charged.  
In this case switch unit OFF for three seconds and then switch back ON.

Continue start up as normal from this point referring to  
B. INSTALLATION 3. WATER CONNECTION.